

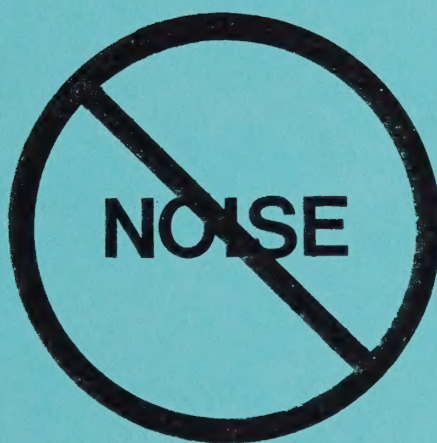
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CITY OF PLEASANT HILL

NOISE ELEMENT

ADOPTED APRIL 4, 1983

RESOLUTION NO. 20-83

A RESOLUTION OF THE CITY COUNCIL, CITY OF PLEASANT HILL, AMENDING THE GENERAL PLAN, ADOPTING THE SAFETY ELEMENT, AMENDING THE SCENIC ROUTES ELEMENT, AMENDING THE NOISE ELEMENT AND AMENDING THE LAND USE ELEMENT TO CHANGE THE DESIGNATION OF THE APPROXIMATE 9.34 ACRES AT THE TERMINUS OF CIVIC DRIVE FROM NEIGHBORHOOD PARK TO CIVIC CENTER AND AMENDING THE TEXT OF THE GENERAL PLAN TO REFLECT THE CHANGES

WHEREAS, the City Council, City of Pleasant Hill, as required by State Law (Title 7, Chapter 3, Article 5, et.al.) has reviewed the amendments to the General Plan as follows:

- 1) Safety Element;
- 2) Scenic Routes Element;
- 3) Noise Element; and
- 4) Land Use Element Amendment - Civic Center Plan; and

WHEREAS, after notice thereof having been duly, regularly and lawfully given, the City Council has held a Public Hearing on the amendments, has reviewed the proffered elements and Resolutions of the Planning Commission, and has examined all pertinent maps and finds that the General Plan should be amended.

NOW, THEREFORE, BE IT RESOLVED that the City Council hereby adopts the following General Plan Amendments as shown on the attached documents labeled:

Exhibit "A" - Safety Element

Exhibit "B" - Scenic Routes Element

Exhibit "C" - Noise Element

Exhibit "D" - Land Use Element - Civic Center Plan

ADOPTED by the City Council, City of Pleasant Hill at a meeting of said Council regularly held on the 4th day of April, 1983, by the following vote:

Ayes: Cooper, Mulhall, Weldon, Holmes

Noes:

Absent: Mustard

OLIVER L. HOLMES, Mayor

Attest:

WETONA L. CRAWFORD, City Clerk

NOISE

INTRODUCTION

There is a growing concern in many communities about the noise levels in their neighborhoods. This report is intended to provide information about noise levels and to suggest ways to reduce them. The report is divided into three parts: a description of noise levels, a description of noise levels in the community, and a description of noise levels in the community. The first part describes noise levels in general. The second part describes noise levels in the community. The third part describes noise levels in the community.

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FIGURE NO. 1

Relative Noise Levels

Relative Noise Level	Relative Noise Level	Relative Noise Level
100	100	100
90	90	90
80	80	80
70	70	70
60	60	60
50	50	50
40	40	40
30	30	30
20	20	20
10	10	10
0	0	0

NOISE

INTRODUCTION

Noise is often defined as *unwanted* sound and in this age of rapid population growth and expanding transportation systems the presence of noise has a pervasive impact on many communities. Left uncontrolled, ambient noise levels, in certain environments, may actually double in the next decade. Pleasant Hill is not immune to this condition, exposing each citizen to some level of noise, and in some neighborhoods the problem can be expected to become even more acute.

The repeated intrusion of noise into daily life may result in the degradation of the health and economic well-being of the community. Physical effects of prolonged exposure to noise may include hearing loss, tension, fatigue and anxiety. Undesirable economic effects are most significantly manifested in the steady reduction of property values.

For these reasons, the State mandated in 1972 that local governments consider noise pollution in their General Plans. With this action, the State required each local jurisdiction to prepare a plan which quantifies both the near and long-term

community noise environment and provides recommendations and programs to existing foreseeable noise problems.

The loudness of *sound or sound level* is measured on the decibel scale. A decibel (dB) is a unit of sound energy with the number of decibels a particular noise produces corresponding to the actual amount of energy present in the sound wave. The scale itself is logarithmic rather than arithmetic. This means that a difference of 3 decibels is a doubling of the amount of energy. While the energy doubles every 3 decibels, a doubling of the perceived noise level requires a change of 10 decibels. Stated differently, a noise that is perceived as twice as loud as another has 10 times the energy (see Figure No. 1).

When combining two sounds, the resulting sound level is not the sum of the individual sounds; instead, it is only a few decibels louder, depending on the relative intensity of the two sounds. For example, if two trucks pass by simultaneously, each producing a sound of 90 dB, the likely resulting sound level is 93 dB, not 180 dB. This would double the energy, but only slightly increase the perceived noise.

FIGURE NO.1
Relative Noise Levels

Relative Intensity sound		Sound Level
1,000,000,000,000	Auto horn (3'). 4-engine jet (100')	120
100,000,000,000	Rock music inside nightclub	110
10,000,000,000	Motorcycle without muffler accelerating. Jackhammer (25')	100
1,000,000,000	Stock motorcycle accelerating (25')	90
100,000,000	Power lawn mower (20')	80
10,000,000	Steady urban traffic (25')	70
1,000,000	Normal conversation (3')	60
100,000	Daytime street, no nearby traffic	50
10,000	Quiet office. Quiet neighborhood	40
1,000	Inside quiet home. Soft whisper (10')	30
100	Movie or recording studio	20
10	Barely audible sound	10
1	Threshold of hearing	0

There are actually several decibel scales; the dB(A) scale is biased to simulate human hearing. The human ear hears higher pitched sounds as being louder than lower pitched sounds of the same intensity. The dB(A) scale compensates for this by giving a decibel boost to higher frequency sounds. Because it simulates human ear response, it is more appropriate for community noise measurement than an unbiased decibel scale.

A further adjustment of the dB(A) scale is often made to account for increased annoyance of noise at night. Noise measurements given in Community Noise Equivalent Levels (CNEL) are the average equivalent of 5 decibels to sound levels in the evening from 7 p.m. to 10 p.m. and an addition of 10 decibels to sound levels in the night before 7 a.m. and after 10 p.m.

A similar system to the CNEL scale is the Day-Night Average Level (Ldn) scale. Under this system the measurement is an average equivalent A-weighted sound level during a 24-hour day, obtained after addition of 10 decibels to sound levels in the night before 7 a.m. and after 10 p.m. To describe the time varying character of noise, the statistical sound descriptors L_{10} , L_{15} and L_{90} are used. The L_{10} descriptor is the A-weighted sound level that is equaled or exceeded 10 percent of a stated time period. The L_{10} is considered a good measure of the average peak noise. The L_{50} and L_{90} descriptors represent the median and background noise, respectively.

The CNEL and Ldn are the accepted methods for describing average annual noise exposure. Typically, the CNEL scale is within 3 to 4 decibels of the L_{10} scale. The California Department of Transportation uses the Ldn scale, while the City of Pleasant Hill measurements are based on the CNEL scale. Both systems are valid and complementary.

NOISE GOAL

TO PROTECT EVERY CITIZEN'S RIGHT TO A HEALTHY ENVIRONMENT FREE FROM THE ANNOYING AND HARMFUL EFFECTS OF EXCESSIVE NOISE.

Over the long-term, the reduction of noise levels to those recommended in this element or below should result in an environment where unstrained verbal communication is possible anywhere in the City. In areas where the noise levels are low enough to allow easy communication, every effort should be made to prevent these levels from increasing, while allowing reasonable use of the land. In areas where the existing noise levels inhibit communication, measures should be undertaken to provide an acceptable long-term environment.

POLICIES & IMPLEMENTATION PROGRAMS

There are three generally accepted ways of controlling noise. The first method is to reduce the noise at its source. If this is not possible, the second method is to place barriers in the path between the source and the receptor. Finally, if the first and second methods are unsuitable or ineffective, then development controls must be used to match the land use with the noise environment, thereby, protecting facilities and their users.

The most effective method of noise control is to prevent noise from being generated (other methods only limit the area affected by the noise). In the City of Pleasant Hill, transportation facilities; especially major roadways with heavy traf-

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fic, are the major sources of noise. This is particularly evident upon review of the General Plan Land Use Map which shows few areas planned for uses which would produce loud noises (i.e., industrial and heavy commercial uses).

To understand the location and severity of the noise from transportation sources, a series of maps have been developed which quantitatively depict the noise impact of major transportation routes within the City.

The attached Noise Contour Maps indicate the 1975, 1990, and 1995 noise contours for the major streets and highways. These maps are based on the California Department of Transportation and Pleasant Hill Community Planning Department traffic counts and spot noise testing. The maps accurately predict noise levels where no on-site obstructions exist (i.e., structures and trees). Thus, the levels are most accurate for undeveloped areas and may overrate areas of existing development depending on the particular location.

In addition to vehicular traffic noise, the City's overall noise level is effected by Buchanan Field's take-off and landing patterns. Over 300,000 aircraft land and depart from Buchanan Field annually, making it one of the 30 busiest airports in the nation. The number of flights has been steadily growing as development continues to occur in the Diablo Valley. The majority of the flights occur over Pleasant Hill and cause considerable annoyance to residents and to students at Diablo Valley College.

The City's control over the airport is limited because it is under the jurisdiction of Contra Costa County and the Federal Aviation Administration. The City needs to work cooperatively with these jurisdictions to limit the impact of the airport on the City.

*Policy A: Noise Control
Control the noise generated by
transportation facilities and
other sources.*

Implementation Programs

- A.1 Noise impacts shall be considered in the planning and development of all street, highway and other transportation projects. Where severe noise impacts from such projects cannot be remedied, the Circulation or Land Use Elements shall be amended accordingly.
- A.2 Provide aggressive enforcement of the City's Noise Control Ordinance to minimize noise for all City controlled or sanctioned activities.
- A.3 Provide input on significant noise legislation which will reduce noise from motorcycles, automobiles, trucks, and aircraft.
- A.4 Encourage that at Buchanan Field noise abatement runways 32R/14L and 32L/14R should be used to the maximum extent possible to reduce noise and to provide the greatest amount of safety for residents of Pleasant Hill.
- A.5 Encourage Contra Costa County and the City of Concord to protect the approach surface for Runway 32R/14L to Federal Aviation Administration 50:1 (horizontal:vertical) precision instrument approach standards in order to provide adequate long-term airspace protection for the runway.
- A.6 Encourage Contra Costa County to continue to actively monitor aircraft noise and strictly enforce all violations of adopted noise abatement procedures.
- A.7 Request Contra Costa County to immediately proceed with the

development of a reliever airport to accommodate training and practice operations which now take place at Buchanan Field.

The second major opportunity to control noise is through control over the path noise takes from the source to the receiver. The path can be interrupted by erecting barriers of various kinds at the roadway edge itself, or by soundproofing buildings to protect the interior noise environment.

Barriers can take many forms, but generally fall into two categories:

- 1) Solid barriers made of concrete, wood or earth; and
- 2) Distance barriers such as landscaped setbacks.

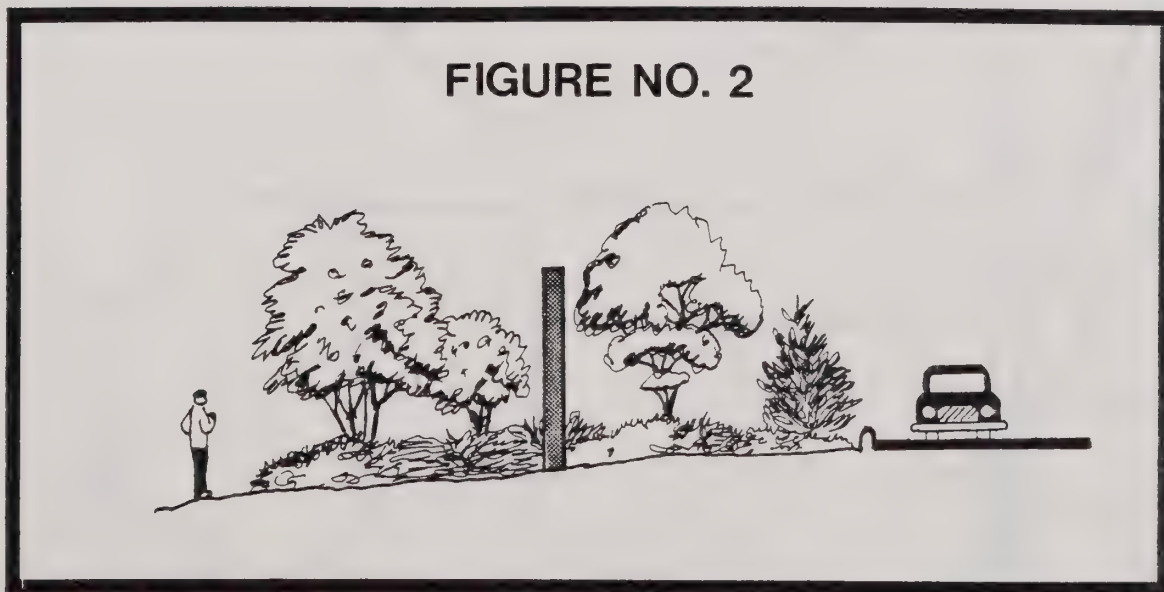
Earth berms provide additional protection as they are wider than a wall and thus provide a distance decrease in the noise. In addition, they provide the opportunity for landscaping which provides a psychological reduction in noise.

barriers can also provide the opportunity for landscaping which further decreases perceived noise. This type of barrier is most appropriate for new construction.

Solid barriers are effective in reducing noise in areas where existing development precludes the use of a distance barrier. Unfortunately, the use of solid barriers has two major drawbacks; cost and aesthetic appearance. The cost of these walls is extremely high and in some instances can only be afforded if other governmental agencies provide grants or the homeowners form an Assessment District. Aesthetically, the vision of a street lined on both sides with walls leaves much to be desired. As shown in Figure No. 2, the negative visual effect can be reduced through the use of landscaping and appropriate setbacks.

Since the original adoption of the Noise Element in 1977, four sound walls have been built; two of which were proposed in that element. These walls include barriers along Highway 680 and North Main Street, along Highway 680 adjacent to east Sherman Acres, along Monument Boulevard, and along Buskirk Avenue. These walls were construc-

FIGURE NO. 2



Distance barriers provide noise reduction in relation to the length of separation between the source and the receiver, generally dividing the sound level in half for each doubling of distance. Distance

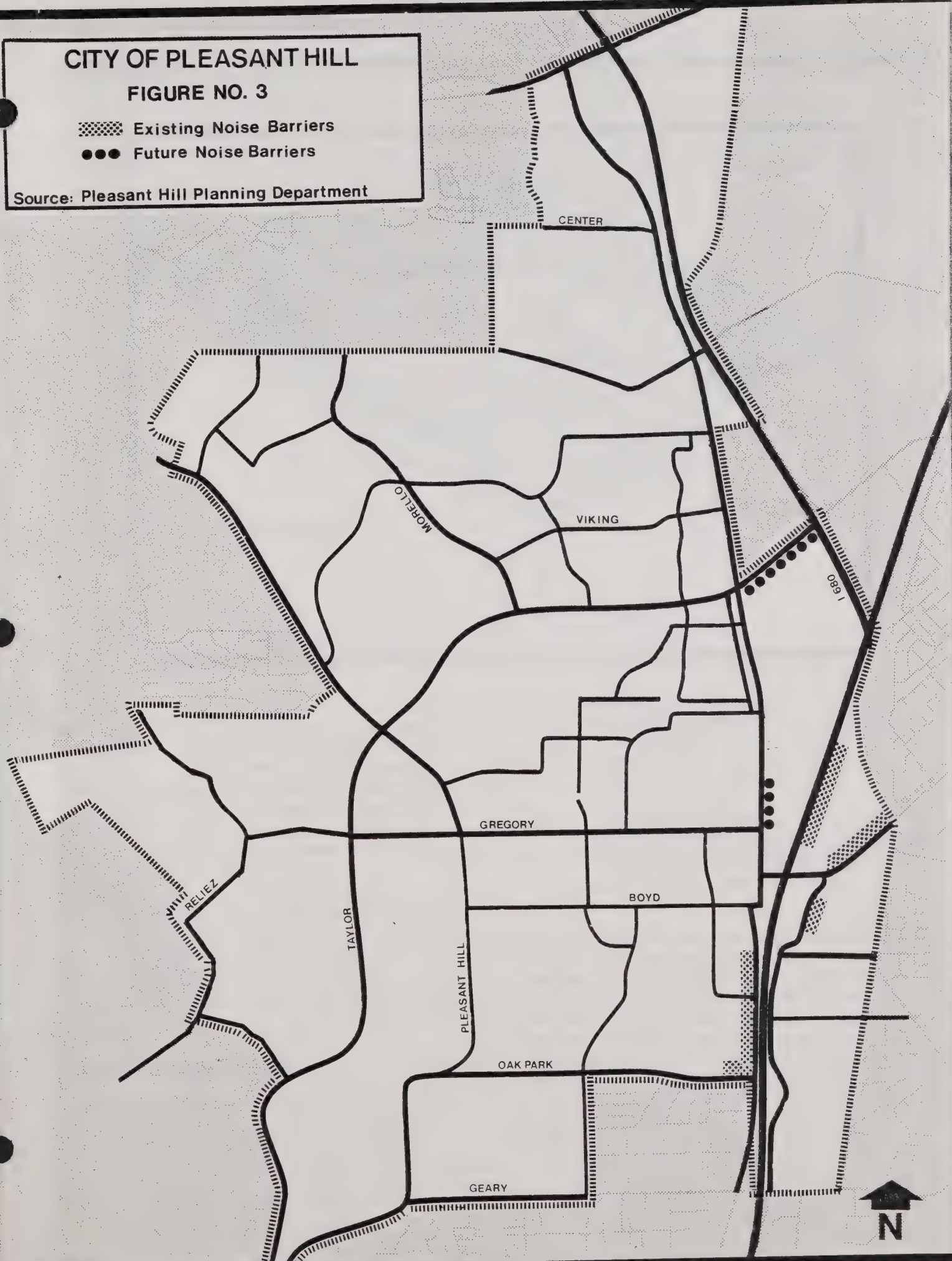
ted using State and Federal funding. Two residential areas that require future barriers are west Sherman Acres adjacent to Highway 680 and Pleasant Hill Manor, adjacent to Willow Pass Road.

CITY OF PLEASANT HILL

FIGURE NO. 3

- Existing Noise Barriers
- Future Noise Barriers

Source: Pleasant Hill Planning Department



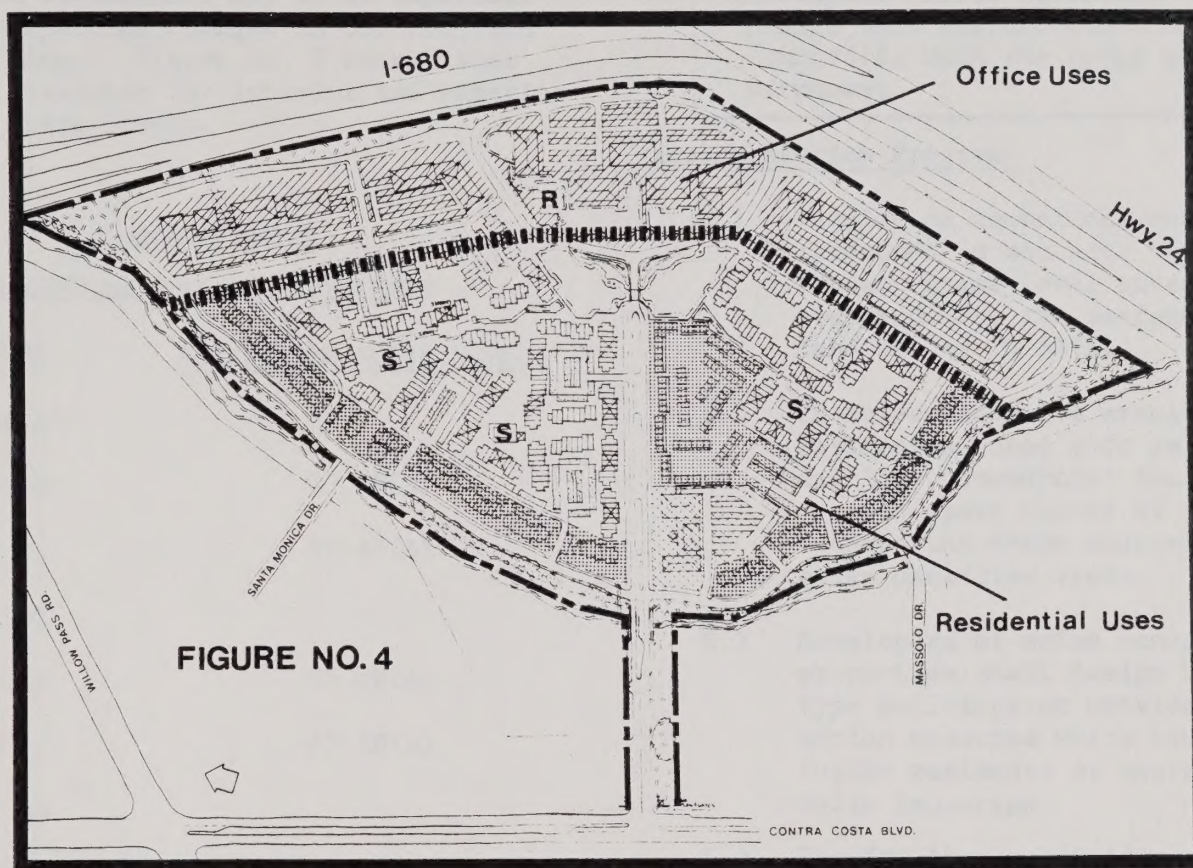


FIGURE NO. 4

In addition to constructing sound walls, commercial or office buildings can be utilized to effectively block noise from residential and other noise-sensitive uses. Such a design is shown in Figure No. 4 and has been effectively used in the Ellinwood Planned Unit Development project.

*Policy B: Noise Path
Promote the use of noise
barriers to reduce effects
of transit induced noise.*

Implementation Programs

- B.1 Seek State and Federal funding to construct noise barriers where the impact of noises can be significantly reduced, including:
- West Sherman Acres
 - Pleasant Hill Manor

B.2 Require acoustical construction techniques in new buildings to reduce the impact of ambient noise.

B.3 Utilize the siting of buildings, fences, fountains and landscaping to shield and/or mask sensitive sites from harmful noise.

Where major noise problems are long established such as residentially encircled Buchanan Field, it is not economically, technologically or politically feasible to reduce harmful noise to any significant degree. Source emission reduction and noise barriers are after-the-fact techniques for addressing land use incompatibilities that should not have occurred in the first place. In the long run, it is evident that those powers which enable the City to control the nature, quality and compatibility of all future development are the most effective means of preventing the occurrence and spread of noise pollution.



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The noise environment may be an important factor supporting changes in use for land and buildings. Figure No. 5 establishes prudent standards for interior and exterior ambient noise levels.

*Policy C: Noise Receivers
Ensure that new development is compatible with the noise environment.*

Implementation Programs

FIGURE NO.5

NOISE/LAND USE COMPATIBILITY

<u>LAND USE</u>	<u>ACCEPTABLE NOISE LEVEL</u>
Residential	
Interior	45 dB(A)
Exterior	55 dB(A)
Commercial	
Interior	55 dB(A)
Exterior	65 dB(A)
Industrial	
Interior	55 dB(A)
Exterior	65 dB(A)
Open Space	
Interior	45 dB(A)
Exterior	55 dB(A)

The major tool available to the City is the ability to direct the location of land uses through the Land Use Element of the General Plan and zoning. In areas which are severely impacted (beginning at the 65 dB(A) contour lines) consideration of the noise environment should be given. In some instances, modifying the designated land use may be appropriate because of the noise environment. That is, where impacts are severe, rezoning may be the only feasible means of obtaining compatibility. As was previously indicated, the arrangement of buildings on a site can greatly improve the noise environment. The Planned Unit Development (PUD) zoning is a particularly useful tool where noise problems exist, since it allows opportunities for reduction through acoustical site planning.

- C.1 Require an acoustical study be conducted in any area where the ambient noise level exceeds the standards for the designated land use by 10 dB(A).
- C.2 In noise sensitive areas, non-residential uses such as parking lots, commercial facilities or open space should be placed between the noise sources and noise sensitive areas.
- C.3 Developers of noise sensitive properties shall design barrier type buildings or provide mitigation measures which protect future residents or users from noise impaction.
- C.4 Require that subdividers and developers notify future residents and building occupants through recorded statements on the subdivision map, the property deed or in the C.C.&R's that the property in the Buchanan Field Flight Path is subject to repeated aircraft overflights and related aircraft noises.



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